

one, more fortunate than Mr. Faxon and I have been, succeeds either in shooting or in getting a good view of the bird while it is in the act of uttering its characteristic notes. On the whole I am glad, rather than the reverse, to be compelled to leave the matter thus unsettled for I should not like to feel that even so thoroughly worked a region as that immediately about Cambridge is wholly without the charm which attends all mysteries.

NESTING HABITS OF THE ANATIDÆ IN NORTH DAKOTA.

BY A. C. BENT.

Plates IV-VI.

From photographs by the author.

I SPENT the last few days of May and the first half of June of the present year, accompanied by Rev. Herbert K. Job, of Kent, Conn., and part of the time, by Dr. Louis B. Bishop, of New Haven, Conn., in the lake region of central North Dakota, principally in the vicinity of Devils Lake, along the Sheyenne River to the southward, through Nelson County and in Steele County. The prairie region naturally comprises by far the greater part of, in fact, nearly all, of the territory covered by our observations. Throughout the eastern portion of North Dakota, particularly in the Red River Valley, where the land is flat and level, and in Steele County, we found the prairie under complete cultivation and sown with wheat or flax wherever the land was level enough or dry enough for the purpose. In these farming districts the meadow lands, too wet for cultivation, were generally mowed for hay. In many cases sloughs and small pond holes were drained for irrigation purposes or to make meadow land; so that bird life was confined to the larger sloughs, the tree claims, and the occasional strips of uncultivated prairie. Farther west, from Nelson County westward, there is much less cultivated land and the wild rolling land of the virgin prairie is only here and there broken by farms with a few hundred acres of wheat fields surrounding each farmhouse. Here we could drive for miles over the un-

broken surface of the prairie, uninterrupted by fences or hills, and not be confined to the section-line roads of the more thickly settled portions of the State. The prairie grass was short and offered very little resistance to the light buckboard, in which we travelled, drawn by a pair of unshod bronchos. In the hollows, where the ground was wet or marshy, the grass grew longer and thicker so that such places had to be avoided.

The bird life of the prairie is not so rich in species nor are the individuals so closely crowded together as in the timbered regions or the sloughs, but certain characteristic species were quite evenly distributed everywhere. The Western Meadowlark and the Chestnut-collared Longspur were probably the commonest species, the rich song of the former and the delightful, warbling flight song of the latter being constantly heard on all sides. The Lark Bunting was common locally and was certainly one of the most conspicuous species met with; the striking black and white plumage of the male and his rich and varied flight song made this one of the most interesting species. Franklin's Gulls were often seen flying over the prairie in scattered flocks to and from their feeding grounds. Bartramian Sandpipers were scattered about in pairs, nesting in the short prairie grass. Occasionally a pair of Prairie Hens were flushed, and once a flock of seven was seen, but this species was not nearly so common as we expected to find it. The Marsh Hawk and the Short-eared Owl were the characteristic Raptores of the open prairies, though other species were common near the timber belts. Burrowing Owls were seen only occasionally. Western Nighthawks were common everywhere. Bobolinks, McCown's Longspurs, Western Vesper Sparrows, Western Savanna Sparrows and Baird's Sparrows were scattered about over the prairies, the first two being fairly abundant locally.

The timbered regions are confined to the shores of the larger lakes, to a narrow strip along the Sheyenne River, and to the 'tree claims,' small patches of trees set out by the early settlers near the farms.

The principal timber trees are swamp oaks, elms, cottonwoods, and box elders. The oaks and elms form the heaviest timber and serve as nesting sites for Ferruginous Rough-legs, Swain-

son's and Krider's Hawks, the largest of them seldom growing to over 40 or 50 feet in height. In these narrow belts of timber bird-life fairly swarmed: Bronzed Grackles were by far the most abundant in certain sections and Mourning Doves were abundant everywhere. Arkansas Kingbirds, always noisy and quarrelsome, made themselves universally conspicuous, and the lively song of the Western House Wren was constantly heard in the timber. Common Kingbirds, Black-billed Cuckoos, Baltimore Orioles, Rose-breasted Grosbeaks, Purple Martins and Yellow Warblers were common and evenly distributed throughout the timber. Clay-colored Sparrows were very common about the edges of the timber, nesting in the 'badger brush' or 'buck brush' which is the commonest shrub in this region. Cowbirds were also very abundant on the prairie near the timber and laid their eggs in all the smaller birds' nests. Many other species were less commonly noted, but space will permit the mention of only the most characteristic species.

In the sloughs the bird-life was not as rich in species, but fully as rich in individuals. The larger sloughs are shallow lakes with open water in the deeper, central portions and in the shallower parts, where the water is from one to three feet deep, overgrown with tall rank reeds or sedges, often higher than a man's head, and with thick patches of cat-tail flags. The smaller sloughs are often entirely overgrown with reeds and flags, showing open water only in small scattered patches or in the deeper channels. The two characteristic species of the sloughs are the Yellow-headed Blackbirds and the American Coots. The Blackbirds fairly swarmed in all the sloughs and the constant din of their monotonous notes soon became very tiresome. The Coots were constantly playing about in the water among the reeds, amusing us with their curious antics. Pied-billed Grebes nested in the more open portions of the sloughs among the scattered reeds, and Black Terns were constantly hovering overhead. Bitterns and Night Herons were occasionally seen, Virginia and Sora Rails nested in the short grass around the shallower edges of the sloughs; Killdeers, Marbled Godwits, Western Willets and Wilson's Phalaropes were flying about the shores and were probably nesting not far off.

Red-winged Blackbirds nested abundantly on the outskirts and Long-billed Marsh Wrens were breeding in the thick flags.

The alkaline lakes form still another feature of this interesting region. The larger lakes are, most of them, more or less alkaline, and the drinking water in many of the towns is sufficiently alkaline to have a flat, unpleasant taste, making it unfit to drink for persons not accustomed to it. The strongly alkaline lakes are met with occasionally in the prairies, more commonly in the western part of the State. No vegetation of any kind grows in these lakes and the shores are lined with thick, heavy, sticky mud, very difficult to walk through and covered with a whitish alkaline deposit.

These mud flats form excellent feeding grounds for the migrating Limicolæ and in the wilder portions of the state the Avocets select such places for their breeding grounds. The Golden Plover migrate through this country in large numbers; the last of them were just about leaving when we arrived. Semipalmated, White-rumped, and Pectoral Sandpipers were often seen in small flocks about the lakes, as well as in the sloughs and on the prairies, also a few Yellow-legs and Turnstones; possibly these were barren or young birds not intending to breed this season.

These alkaline lakes are evidently not distasteful to the ducks, as we often saw large numbers of Mallards, Pintails, and Shovellers swimming about in them. In fact every body of water that we passed was frequented more or less by the commoner species of the Anatidæ.

With this brief summary of the general characteristics of the region, we will proceed to take up the nesting habits of the ducks in detail.

Lophodytes cucullatus (Linn.). HOODED MERGANSER.

This is one of the rarer ducks in the region we visited though it is fairly common along the timbered portion of the Sheyenne River. I shot one specimen in Steele County on June 12, which proved to be a young male in the plumage resembling the female. We saw a flock of six in Nelson County on June 15, and a single bird there on the 16th. These birds were probably not breeding birds, as they were in the larger lakes a long distance from any timber. Dr. Bishop and Mr. Job visited the Sheyenne River

timber on June 18, where they found the Mergansers common and breeding. The birds were probably all hatched by this time, as they found only broken egg shells in the hollow trees used for nesting purposes.

Anas boschas *Linn.* MALLARD.

Although the Mallard is a common duck in North Dakota, it is not nearly as common as I expected to find it and is certainly outnumbered by at least three species, the Blue-winged Teal, the Pintail, and the Shoveller. It is quite generally and evenly distributed, however, all over the prairie region and scattered pairs were seen almost everywhere in suitable localities. It is an early breeder, many of the broods being hatched out before June 1, though we found fresh eggs on May 31, and one set of 13 eggs, apparently heavily incubated, on June 15. The female is very courageous in the defense of her young. We had a striking illustration of this fact on May 30, when we surprised one of these birds with her brood of young in a little pondhole in the timber; although the young were well hidden in the surrounding grass and bushes, the old bird was flapping about within a few feet of us, splashing and quacking loudly, frequently rising and circling about us, then dropping into the pond again, showing every symptom of anxiety and interest in our movements and being totally regardless of her own safety. But the young were too well concealed for us, so we left the anxious mother in peace.

The locality chosen by the Mallard for its nest is generally on or near the edge of a slough or lake, either among dry dead flags where the ground is dry or only slightly marshy, or upon the higher land not far from the water and among thick dry reeds. Two of the nests we found were on an island in a lake, placed on the ground in the middle of a patch of tall dry reedlike grass locally called 'queen of the prairie,' which grows higher than a man's head. One of these nests, containing 10 fresh eggs on May 31, is shown in the photograph (Plate IV, Fig. 1).

Our guide, a collector of considerable experience, informed us that they also nested on the open prairies but we did not find any nests in such locations.



FIG. 1. NEST AND EGGS OF MALLARD.



FIG. 2. NEST AND EGGS OF GADWALL.

The nest is well hidden and consists of a hollow in the ground well lined with broken dry reeds or flags, apparently picked up in the immediate vicinity, well mixed with dark gray down and a few feathers from the bird's breast; the down is thickest around the edges of the nest and increases in quantity as incubation advances. The nests we found contained from 10 to 13 eggs. The eggs are elliptical ovate in shape and vary in color from a light greenish buff to a light grayish buff, with very little lustre.

The measurements of 22 eggs in my collection exhibit the following figures: Length, 2.36 to 2.07; breadth, 1.66 to 1.52; average, 2.27 by 1.61 inches.

The eggs of the Mallard can be easily mistaken for those of the Pintail, but they will average slightly larger, a little lighter in color and are not quite so much elongated. The female Mallard when flushed can be readily distinguished from the Pintail by its larger size, shorter neck and by its blue speculum with conspicuous white borders.

Chaulelasmus streperus Linn. GADWALL.

The Gadwall is not one of the commonest ducks though we found it fairly abundant in the vicinity of the larger lakes, where it breeds on the islands together with the Baldpates and Lesser Scaup Ducks, the latter two species, however, far outnumbering it even here. The nest is always placed on dry ground but not very far from the water. A hollow is scooped in the ground and well lined with strips or pieces of reeds, bits of dry grass and weed stems, or whatever material can be most easily gathered in the vicinity, mixed with down from the birds' breast and profusely lined with dark gray down, around the eggs. Seven nests of this species, found on two small islands on June 15, 1901, were located as follows: Nest No. 1 was in the prairie grass on the higher part of the island, which was at that time about one foot high and growing thickly all over the island except for a few small clumps of wild rose bushes in full bloom and two patches of the tall 'queen of the prairie' reeds referred to under the preceeding species. This nest contained seven eggs, apparently fresh. Nest No. 2 was well concealed in a narrow strip of 'queen of the

prairie' reeds growing tall and thick along the bank where it sloped down to the beach. It was partially arched over by the prostrate stems of the dead reeds of last years growth, as shown in the photograph (Plate IV, Fig. 2).

Very little down was used in the construction of this nest, which contained 11 nearly fresh eggs. The parent bird was shot for identification. Nest No. 3 was not far away in a more open place in the same patch of reeds. It was well made of strips and broken pieces of the reeds mixed with down and profusely lined with down around the edges. The nest contained 10 eggs in which incubation was considerably advanced. The location and structure of the nest is illustrated in the photograph (Plate V, Fig. 1).

The other four nests were found on a neighboring island, somewhat smaller, about two acres in extent, high and rocky at one end with thick clumps of wild rose bushes growing among numerous boulders, and flat at the other end partially covered with prairie grass and partially bare, except for scattered clumps of rank weeds. About 100 pairs of Ring-billed Gulls were breeding on this island and large numbers of Common Terns. Two of the Gadwalls' nests were in the prairie grass and two were in small clumps of the rank weeds. One of these latter two is now in my collection; it was well made of dry grass and weed stems and thickly lined with dark gray down, particularly around the edges; it contained 11 nearly fresh eggs of the Gadwall and one egg of the Lesser Scaup Duck, which was breeding abundantly on both of these islands.

Baldpates were also breeding abundantly here and we experienced considerable difficulty, at first, in identifying the nests of the Gadwall. These ducks are all close sitters, and after shooting a few birds we soon learned to identify them as we flushed them from the nests. The females of the two species resemble each other very closely, but the Gadwall is considerably darker on the back and rump, whereas the Baldpate is lighter and shows conspicuous light patches in the wings as she flies away. There is also a great similarity between the eggs of the two species, but there is a slight and fairly constant difference; the Gadwall's eggs are nearly oval in shape, shorter and more rounded than those of the